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BRIEFER ARTICLES

A NEW SPECIES OF ANDROPOGON

Andropogon urbanianus, n. sp.—Perennis; culmis glabris, 60–120 cm. altis; laminis teretibus, glabris; racemis binis, 2–4 cm. longis, vagina longioribus; rachi villoso; spicula sessili glabra, a basi villosa, 5 mm. longa, arista 2 cm. longa; pedicelli sterili villoso, 5 mm. longo, spicula pedicellata 3 mm. longa.

Perennial; culms glabrous, 60–120 cm. high, branched above, sheaths villous on the margin and toward the summit, or glabrate; ligule membranaceous, ciliate, 2 mm. long; blades terete, channeled above, glabrous, the two margins of the channel scabrous, villous above at base, 10–20 cm. long, about 1 mm. thick, tapering to a fine point; racemes 2 from each sheath, silky but not densely so, 2–4 cm. long, scattered along the upper part of the culms, usually of unequal length, the rachis joints slender, villous with long hairs, the subtending sheath shorter than the racemes; sessile spikelets 5 mm. long, glabrous, villous at base, scabrous above on nerves and keels, the awn geniculate, twisted below, 2 cm. long; sterile pedicel about as long as sessile spikelet, villous with hairs as much as 1 cm. long; pediceled spikelet reduced to a scale 3 mm. long.

Type specimen collected in Santo Domingo, Prov. Barahona near Las Salinas, by Padre MIGUEL FUERTES, no 1420, Sept. 1911. Other specimens referred to this species are: CAMACHE (St. Michel), Haiti, "in prato montano sicco"; W. BUCH no. 1074; FURCY, Buch 961.—A. S. HITCHCOCK, *Washington, D.C.*

EVAPORATION AND THE STRATIFICATION OF VEGETATION

(WITH ONE FIGURE)

During some investigations of the evaporating power of the air in various plant associations, data were obtained that show the amount of increase in the atmospheric humidity of the confined area of a ravine, and that tend to emphasize the contention of YAPP[1] that the varying evaporation conditions at different levels in the same plant association may permit plants to grow in close proximity with one another, and yet, vegetating principally in different strata, to be subject to rather widely different growth conditions. Evidence supporting this view has also been furnished by DACHNOWSKI[2] and SHERFF[3] from observations extending over comparatively brief periods, all of these observers working in swamp or bog habitats.

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[1] YAPP, R. H., On stratification in the vegetation of a marsh, and its relations to evaporation and temperature. Ann. Botany **23**:275–320. 1909.

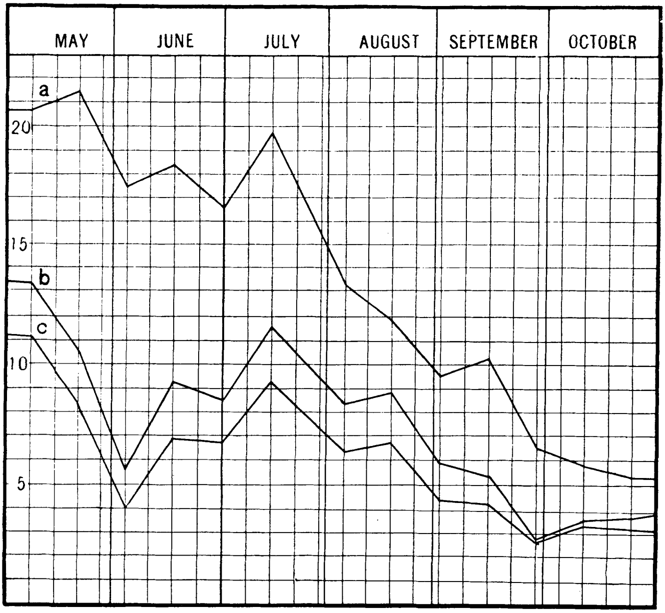

FIG. 1.—Diagram showing the average daily rate of evaporation in three strata of the beech-maple forest association for the growing season of 1911.

The present records were obtained during the season extending from May 1 to October 31, 1911, in some comparatively undisturbed beech-maple forests about 45 miles southeast of Chicago near the little village of Otis, Ind. The forest was of the usual climax mesophytic type. Its vegetation and the methods employed in obtaining the evaporation data by the use of the LIVINGSTON atmometers have been described in a previous paper.[4] The observations were made and the results have been plotted graphically for three different strata, with the intervals between the weekly readings as abscissae and the daily evaporation from the standard LIVINGSTON atmometer as ordinates (fig. 1). The intermediate graph (fig. 1*b*) represents the mean of three stations situated upon the forest floor, with the atmometers 25 cm. above the surface of the soil, in conditions of average vegetation. Here the average rate for the season was 7.4 cc. per day. The highest rate (fig. 1*a*) is that given by an instrument elevated 2 m. above the forest floor and shows an average of 13.5 cc. daily, or very nearly twice the amount of the stations immediately above the soil surface. The third record (fig. 1*c*) is for a station situated upon the slope of a ravine 10 m. deep, cut in the clay soil by a wet weather stream, and having a V-shaped outline in cross-section. The atmometer was placed 4 m. below the edge of the ravine and gave an average for the season of 5.9 cc. daily.

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[2] DACHNOWSKI, A., Vegetation of Cranberry Island. BOT. GAZ. **52**:126–149. 1911.

[3] SHERFF, E. E., Vegetation of Skokie Marsh. BOT. GAZ. **53**:415–435. 1912.

If the average rate of evaporation at the stations upon the forest floor be taken as unity, the proportional evaporating power of the air in the three strata will be found to be very nearly 1.84:1.00:0.80 for the season, and these figures may be taken to represent, more exactly than any previously available data, the measure of the mesophytism of these three several regions. It may also be noted that the elevated station has a much higher rate proportionally during the first half of the season.

The object of this paper being to indicate the amount of difference existing in the atmospheric conditions of some of the different strata of the same association, and to show how these differences may vary throughout the growing season, no attempt will be made to relate the vegetation to the different rates of evaporation. More extensive records must be obtained and an intensive study of the composition of the association undertaken before any satisfactory conclusions can be reached. It is interesting and important, however, to note the different atmospheric conditions to be encountered by forest tree seedlings during the first two years of their existence and at a later period when they reach the height of a meter or more. This may indicate one of the most important reasons why so many of the beech seedlings die before attaining the height of two meters. It may also be remarked that the lower evaporation in the ravine may be a sufficient explanation for the presence upon its slopes of a much greater abundance of such delicate forms as *Dicentra canadensis*, *D. Cucullaria*, *Impatiens biflora*, and *Asplenium angustifolium*.—GEORGE D. FULLER, *University of Chicago*.

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[4] FULLER, G. D., Evaporation and plant succession. BOT. GAZ. **52**:193–208. 1911.